Name_____

Date_____ Block_____

Notes – Properties of Logarithms

*Note that for all of these properties, the logarithms must have the same base!

Product Property: The logarithm of a product is the sum of the logarithms of its factors. (Add)

Examples: $\log_2 3\cdot 4 = \log_2 3 + \log_2 4$ OR $\log_5 6 + \log_5 x = \log_5 6x$

In a generalized symbolic form: $\log_b mn = \log_b m + \log_b n$

You try. Rewrite the following: 1. $\log_{12} 7\cdot 3 =$ 2. $\ln 5 + \ln y =$

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Quotient Property: The logarithm of a quotient is the difference of the logarithms of the numerator and the denominator. (Subtract)

Examples: $\log_3 \frac{5}{7} = \log_3 5 - \log_3 7$ OR $\log x - \log(2x-3) = \log\frac{x}{2x-3}$

In a generalized symbolic form: $\log_b \frac{m}{n} = \log_b m - \log_b n$

You try. Rewrite the following: 1. $\log_{12} \frac{7}{3} =$ 2. $\log 5x - \log 13$

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Power Property: The logarithm of a power is the product of the logarithm and the exponent. (Bring the exponent out front).

Examples: $\log_4 6^2 = 2\log_4 6$ OR $4\ln x = \ln x^4$

In a generalized symbolic form: $\log_b m^p = p\log_b m$

You try. Rewrite the following: 1. $\log_{15} 5^3 =$ 2. $8\log_3 2 =$

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